

WHAT IS CLAIMED IS:

1. A fuel cell, comprising:
a separator on which a gas passage groove is formed, wherein a cross sectional area of a gas passage changes in a direction in which the gas passage groove extends, while each of an opening width of the gas passage groove and a depth of the gas passage groove remains substantially constant.
2. The fuel cell according to claim 1, further comprising:
a membrane-electrode assembly which is sandwiched by two of the separators, wherein an opening portion of the gas passage groove faces the membrane-electrode assembly.
3. The fuel cell according to claim 1, wherein the cross sectional area of the gas passage is changed such that the cross sectional area of the gas passage on a downstream side in a gas flow direction becomes smaller than the cross sectional area of the gas passage on an upstream side in the gas flow direction.
4. The fuel cell according to claim 3, wherein the cross sectional area of the gas passage is decreased continuously.
5. The fuel cell according to claim 3, wherein the cross sectional area of the gas passage is decreased in stepped-stages.
6. The fuel cell according to claim 1, wherein the cross sectional area of the gas passage is changed by changing an inclination angle of a side surface of the gas passage groove.
7. The fuel cell according to claim 6, wherein the inclination angle of the side surface of the gas passage groove on a downstream side in a gas flow direction is larger than the inclination angle of the side surface of the gas passage groove on an upstream side in the gas flow direction.
8. The fuel cell according to claim 1, wherein the gas passage groove includes a curve

portion which is a transition portion between a side surface of the gas passage groove and a bottom surface of the gas passage groove and which curves, and the cross sectional area of the gas passage is changed by changing a radius of curvature of at least one curve portion.

9. The fuel cell according to claim 8, wherein the radius of curvature of the curve portion of the gas passage groove on a downstream side in a gas flow direction is larger than the radius of curvature of the curve portion of the gas passage groove on an upstream side in the gas flow direction.
10. The fuel cell according to claim 1, wherein the cross sectional area of the gas passage is changed by changing a width of a bottom surface of the gas passage groove.
11. The fuel cell according to claim 10, wherein the width of the bottom surface of the gas passage groove on a downstream side in a gas flow direction is smaller than the width of the bottom surface of the gas passage groove on an upstream side in the gas flow direction.
12. A fuel cell, comprising:
a metal separator on which a gas passage groove is formed, wherein a cross sectional area of a gas passage changes in a direction in which the gas passage groove extends.
13. The fuel cell according to claim 12, wherein the cross sectional area of the gas passage is changed by changing a thickness of a surface treatment layer of the gas passage groove.
14. The fuel cell according to claim 13, wherein the thickness of the surface treatment layer of the gas passage groove on a downstream side in a gas flow direction is larger than the thickness of the surface treatment layer of the gas passage groove on an upstream side in the gas flow direction.